Keepin' It R.E.A.L.!: Program Description and Results of Baseline Assessment[1]

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Abstract:

In this article, the authors present the results of the analysis of the baseline data from Keepin' it R.E.A.L.!, an HIV prevention project developed for mothers and their adolescents. Six hundred twelve mostly male (60.6%) and African American (98.2%) adolescents completed baseline assessments. Eleven percent of the adolescent participants reported initiating sexual intercourse. Adolescent participants expressing higher levels of self-efficacy to resist peer pressure, more favorable outcome expectancies, less communication about sex with their mothers, higher levels of self-concept related to their behavior, lower levels of self-concept related to popularity, and less stress reported fewer types of intimate sexual behaviors. Adolescent participants who reported higher self- efficacy to resist peer pressure to have sex and lower levels of stress were less likely to have initiated sexual intercourse. Selected characteristics of mothers did not contribute to understanding factors associated with intimate sexual behaviors or initiation of sexual intercourse among adolescent participants.

Article:

Of the 753,907 AIDS cases reported in the United States through June 2000, about 4% were among adolescents and young adults ages 13-24.[1] Although adolescents and young adults account for only a small percentage of AIDS cases, it is recognized that the number of people younger than 25 years infected with HIV but not yet diagnosed with AIDS is far greater.[2] Indeed, in states reporting the number of new HIV (not AIDS) infections, 17% of these new HIV cases were among 13- to 24-year-old adolescents and young adults.[1] The Centers for Disease Control and Prevention (1999) surveillance data also showed that people of color were most affected.[1] While representing about 12% of the U.S. population, African Americans accounted for almost 40% of AIDS cases among men and almost 60% of cases among women younger than 25 years.[1] Given the disproportionate pattern of HIV infection for African Americans, it is important to understand risk factors. Two behaviors that place African American adolescents, as well as others, at risk for contracting HIV are having unprotected sexual intercourse and having sexual intercourse with multiple partners. The findings of a recent National Youth Risk Behavior Survey[3] reveal that 68.4% of African American men and 58.9% of African American women report using condoms at last sexual intercourse, and 52.8% of African American men and 25.4%

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of African American women report four or more lifetime sexual partners.[3] The trend toward younger age at first intercourse[4] and older age at first marriage increases the potential for multiple sexual partners and ultimately the risk for contacting HIV and other sexually transmitted diseases (STDs).[5]

The public health concern regarding HIV transmission among African American adolescents, particularly those living in areas with high rates of HIV infection, has led to public support for the development and testing of HIV prevention programs for them. Several interventions have been rigorously evaluated and have been found to be successful in reducing risky sexual behaviors among African American youths.[6,7] These programs have generally focused on increasing adolescents' knowledge and perceived level of risk and concern about HIV and AIDS. The programs have also included information and skill-building exercises designed to change attitudes toward safer sex and enhance skills related to practicing safer sex behaviors.

Despite the success of these programs, they are limited in duration, usually 4 to 8 weeks in length, and do not always correspond to the participants' readiness to learn about HIV prevention. A complementary approach for structuring programs for adolescents is to involve parents in HIV education for their children. Using this approach, parents learn about reproductive health, HIV prevention, and techniques for teaching their adolescents about sexual health. The underlying premise of this approach is that adequately informed parents can teach and reinforce HIV prevention messages as needed as their children grow. Moreover, parents can individualize the teaching for the particular circumstances of their adolescent's life. The ultimate goal of these programs is to increase parents' effectiveness in the education of their youths about sex and HIV prevention.

In this article, we report the results of an initial assessment of factors associated with sexual experience among 11- through 14-year-old adolescents. This assessment was conducted as a first step in an HIV prevention project developed for mothers and their adolescents. The project was named Keepin' it R.E.A.L.! (Responsible, Empowered, Aware, Living). The primary aims of the project were to test the efficacy of two interventions designed to promote delay of sexual intercourse among 11- through 14-year-old adolescents and to enhance the mother's role in postponing sexual debut. The analysis reported here is based on the baseline data collected from all participants prior to the conduction of the intervention. This analysis includes a test of the extent to which proposed mediating factors (self-efficacy, outcome expectancies, sex-based communication, self-concept, future time perspective, stress, and parenting) influenced adolescents' participation in progressively more intimate forms of sexual behavior and the initiation of sexual intercourse.

METHOD

Procedures

Keepin' it R.E.A.L. ! was conducted in collaboration with a community-based organization dedicated to serving disadvantaged youths. The primary mission of the organization is to help youths develop the values and skills required to become productive adults, responsible

citizens, and community leaders. The organization offers after-school and summer programs for children in elementary through high school. The types of programs include structured study time, homework assistance and tutoring, intramural sports, leadership development, health education, and community involvement activities. The organization has a national office with local affiliations in all 50 states. Keepin' it R.E.A.L.! was offered in a large southeastern city whose local affiliate manages 26 sites in the city and surrounding metropolitan area. Twelve of these sites were selected for the evaluation of Keepin' it R.E.A.L. !. The sites selected were closest to the inner city and had the highest percentage of African American youths (80% or more). Shortly before implementing the intervention, the 12 sites were randomly assigned to the two interventions and one control condition with four sites assigned to each condition, resulting in a randomized cluster design .[8] One site assigned to the problem behavior intervention was subsequently dropped because of pending major administrative changes. This site was the smallest, and its loss did not affect recruitment. Thus, a new site was not added. The adolescents served by the organization matched the profile of adolescents considered at risk for early onset of sexual intercourse and HIV infection. The youths served were primarily from disadvantaged economic, social, and family circumstances with more than 63% of members from single-parent homes.

Sample Size

The sample size for the study was calculated using rates of sexual activity of a slightly older (13- through15-year-old) sample of adolescent boys and girls living in a metropolitan area. These data showed that by the time they were 15 years of age, 50% of the participants were sexually active. The goal of Keepin' it R.E.A.L.! is to increase to 75% the number of adolescent participants who choose to delay sexual intercourse beyond 15 years of age. Based on the initial calculation, a sample size of 125 adolescents per condition was required. Because we randomized by site rather than by person, intraclass or intracluster correlation was also taken into consideration when calculating sample size. Because people within intact groups tend to respond similarly to each other but differently from people in other intact groups, intraclass correlation may exist and can affect results of the analyses. Because we expected that some participants would not complete all of the follow-up study measures, the effects of attrition were also included in the calculation of sample size. With additional adjustments for intracluster correlation and attrition, 192 adolescent participants for each condition were required at baseline. Each adolescent (N = 576) was required to have a mother participate.

Recruitment

Before beginning the implementation phase of Keepin' it R.E.A.L.!, the directors at each site provided the number of 11- through 14-year-old adolescents at their sites. From these figures, recruitment goals for each site were set. The implementation phase was designed so that the three conditions—social cognitive, problem behavior, and control— were conducted simultaneously in three groups of separate sites to control for secular trends. Recruitment was focused on one site per condition at any one time. When recruitment goals were reached for a condition at a particular site, recruitment began at the next site assigned to that condition.

To obtain a representative sample of adolescents attending programs at the community organization, a set of recruitment strategies was developed. The goal of recruitment was to make certain that all mothers of 11- through 14-year-old adolescents were aware of the project

and were given an opportunity to enroll in the project. Site directors first compiled lists of adolescents between the ages of 11 and 14. Using these lists, recruiters called mothers of the adolescents to assess eligibility and interest. Although telephone recruitment was the primary mode of assessing interest in the study, there were other ways in which participants were informed about the study. The program was advertised at the sites through word of mouth and through posters displaying the project logo and contact information. Recruiters also maintained a visible presence at each site by wearing Keepin' it R.E.A.L.! identification and T-shirts bearing the project logo, and they were available to discuss the program with mothers who came to drop off or pick up their adolescents.

Mothers who expressed interest in the study were given a brief description of the project. Although mothers were told that there were three different programs—social cognitive, problem behavior, and control—within Keepin' it R.E.A.L.! and the research nature of the program, they were only given specific information about the program to which their site was assigned. Mothers were then screened for eligibility using a brief screening form. Recruiters obtained information about age of the adolescent and relationship to the adolescent. To participate, adolescents were required to be 11 through 14 years of age at the time of baseline interview and must have resided with their mother for the past year. Female legal guardians of adolescents were eligible to participate if they, too, had lived with the adolescent and performed in the mother's role for the previous year.

Interventions

As noted above, Keepin' it R.E.A.L.! was composed of two separate HIV prevention interventions—social cognitive theory and problem behavior theory. Within social cognitive theory, behavior is conceptualized as the result of interactions among personal factors, environmental factors, and the behavior itself.[9,10] The adoption of health-promoting behaviors occurs through strengthening cognitive, behavioral, and efficacy skills and environmental supports related to the behavior. Salient personal factors are self-efficacy (confidence in performing a behavior), outcome expectancies (expectations about the outcomes associated with behavioral performance), and behavioral goals. Environmental factors can include individuals and resources that lend support for the behavioral performance. In referring to safer sex practices, Bandura[11] noted that if individuals are to prevent HIV infection, they must exert influence over their own sexual behaviors. To do so, they must develop confidence in their ability to self-regulate their behavior, that is, to choose safe rather than nonsafe behaviors and to expect positive outcomes associated with their choice. To be effective, HIV prevention programs must be behavior specific and teach adolescents about safe and risky sexual practices as well as outcomes associated with each. Effective programs must also teach underlying skills such as goal setting, recognizing stimuli that trigger unsafe behaviors, reinforcing positive behaviors, and effective communication skills that are vital for relationship formation and negotiation for safer sex.[11] Although an individual-oriented, behavior-specific intervention has been the usual test of social cognitive theory, a family-oriented, behavior-specific intervention is consistent with Bandura's conceptualization of behavioral determinants. Bandura[11] argues that knowledge of safe and risky sexual behaviors is insufficient for people to change behavior as people need opportunities, resources, and guidance (i.e., environmental supports) to develop self-regulatory skills. Thus, an approach used in this study was to teach parents how to support their adolescents' efforts in developing HIV risk-reduction behaviors.

Problem behavior theory, on the other hand, is based on the findings that problem behaviors such as alcohol and tobacco use, sexual intercourse initiated at an early age, and delinquency cluster within adolescents and that a common psychological-social structure underlies involvement in these behaviors. [12,13] Empirical data suggest that problem behaviors are associated with a set of common factors, which include low academic achievement and aspiration, low self-esteem, poor family relationships, and deprived neighborhood.[14] Protective factors to counter these risk factors include good school performance, positive self-concept, and supportive family and community relationships.[15] Weissberg et al.,[15] among others, proffer that risk factors can be reduced and protective factors enhanced through the use of a comprehensive competency-based intervention. The goals of such an intervention are to build feelings of efficacy in diverse aspects of life through enhancing self-concept, achievement motivation, and family and community supports. Strategies to improve competence include providing opportunities to be involved and contribute meaningfully to family and school, developing skills, motivation, information to succeed, and fostering supportive behaviors among family and community members.[15] The focus of this approach is to discourage harmful behavior, to foster relationships with family and community, and to encourage prosocial activities that compete with less socially desirable problem behaviors.

In Keepin' it R.E.A.L.!, both theory-based interventions included an individual and a family component. The application of the theories to Keepin' it R.E.A.L.! are briefly described below. Table 1 displays an outline of the major components of each intervention.

Social Cognitive Intervention

In the social cognitive intervention, mothers and adolescents met once every 2 weeks for 3 months for a total of seven sessions. Each session began with an introductory section in which the facilitator gave an overview of the session and conducted a warm-up exercise to build group cohesion. In all but the first session, the warm-up activity was followed by a discussion of take-home activities and progress in meeting personal goals set by each participant. Mothers and adolescents remained together for sessions 1, 3, 4, and 6 and were divided for breakout discussions in sessions 2, 5, and 7. All sessions were designed to be interactive with liberal use of games, videos, role-plays, and skits to demonstrate and practice concepts presented in the sessions. At the end of each session, take-home activities that augmented session content were distributed, and each participant was asked to set a personal goal to be accomplished before the next session.

The first session began by providing information about the program, including a preview of the seven sessions, and establishing group rules. Participants then discussed HIV transmission, protection, and living with HIV disease. Content in session 2 was devoted to adolescent development. In this session, mothers and adolescents formed separate

Table 1. Characteristics of Treatment and Control Conditions and Mediating Variables for the Treatment Conditions

Session	Social Cognitive Condition		Problem Behavior Condition		Control Condition
	Mothers	Adolescents	Mothers	Adolescents	Mothers and Adolescents
1	HIV/AIDS introduction		Introduction Likes/dislikes of parenting	Program introduction	HIV video and facilitator-led discussion on HIV transmission and safer sex practices
2	Puberty	Peer pressure	Personal and parenting goals	Tobacco use	
3	Communication skills		Significant personal events and impact on parenting	Alcohol and drug use	
4	Talking about sex		Nurturing your adolescent to successful adulthood	Violence	
5	Difficult topics	Sexual decision making	Personal childhood experiences and influence on parenting	Sexual intercourse	
6	Putting it all together		Personal and parenting strengths	School performance	
7	Condom use skills	Consequences of sexual intercourse	Pot luck with adolescents	Pot luck with mothers	
Additional activities	None		None	1. Visit to senior citizens 2. Exposure to career opportunities 3. Community service activity 4. College trip	None
Mediating variables	Self-efficacy Outcome expectancies Sex-based communication		Self-esteem Future time perspective Stress Parenting		
Number of sessions	7		7		1
Length of sessions	2 hours		2 hours		1 hour

groups to discuss issues associated with adolescent development, including physical and physiological changes, and the growing influence of peers. In session 3, participants discussed different styles of communication and demonstrated assertive communication through role-plays. Building on skills learned in session 3, participants focused on talking about sex in session 4.

In session 5, mothers and adolescent participants met in separate groups. Mothers discussed topics that were more difficult for them to discuss with their teens, and adolescents worked on sexual decision making. In session 6, puppets were used to assist mothers and adolescents in demonstrating the knowledge and skills they had learned in the program. Mothers and adolescents met separately for most of the final session. Mothers discussed condoms and practiced putting condoms on models, and adolescents discussed the potential consequences of having sexual intercourse at a young age. Mothers and adolescents met together for the final segment of session 7 to share their experiences with the program and to receive certificates of completion.

Problem Behavior Intervention—Life Skills

Mothers and adolescents assigned to this condition met in the evening once every 2 weeks for a total of seven sessions. Mothers and adolescents met in separate groups during most of the seven regular sessions. However, during portions of the first and seventh sessions, they met together. The sessions for adolescents were referred to as the Life Skills Intervention. All seven regular sessions followed a general format, with each session beginning with a stress reduction exercise. Except for the first and last session, each regular session for adolescents was devoted to a specific type of problem or at-risk behavior and followed a general format. For each behavior, prevalence rates were given, and group members discussed pros and cons of the behaviors. Group members then participated in decision-making and skill-building activities surrounding each issue, and they discussed effective ways to communicate with their parents and peers. Sessions were highly interactive, with each including games and role-plays. At the end of each session, take-home activities were distributed. Sessions 2 through 5 included content on five problem behaviors: tobacco, alcohol and drug use, early initiation of sexual intercourse, and violence. The general format was slightly different for session 6 in which positive behaviors related to school performance were discussed along with ways to maintain these behaviors. In session 7, adolescents made a collage representing what they had learned in the program. They then joined with their mothers for a potluck dinner and shared their experiences with the program.

The seven regular adolescent sessions were augmented by six prosocial experiential activities for the teens. These activities included two visits to senior centers, two worksite exposures, a community service activity, and a college trip. Although the activities were for teens, parents were encouraged to serve as chaperones. For the senior visits, a local senior center or nursing facility was identified in the community, and participants were taken to the center to visit seniors. During one of the two senior visits, adolescents participated in an intergenerational interview. These interviews gave adolescents a chance to ask the seniors questions about how life was when they were their age. During the second visit, adolescents joined seniors in activities such as arts and crafts, bingo, and a sporting event.

Adolescents in the program also participated in a community service activity. This activity was coordinated with local organizations in need of assistance, such as the community food bank, a local organization that collects and distributes food to those in need. Adolescents were taken to the facility and worked for several hours on a variety of tasks. The purpose of this activity was to provide a greater sense of social responsibility for the participants.

To enhance future time perspective among participants, two worksite exposures were coordinated with local companies to familiarize adolescents with a variety of careers and expose them to career options. The culmination of the Life Skills Intervention was an overnight trip to a historically black college or university (HBCU), the purpose of which was to enhance future goal orientation and expose teens to successful role models. A variety of activities for the college trip were designed to give participants an appreciation for college life. These activities included touring the campus, attending a sporting event on campus, sitting in on a class, eating at the college cafeteria, talking with students or professors about college life, and touring historical sites.

Problem Behavior Intervention—Parenting Program

The second component of the problem behavior intervention was referred to as theparenting program for mothers. At the same time teens attended regular program sessions, their mothers attended parenting sessions. Rather than develop a parenting program for Keepin' it R.E.A.L.!, we reviewed existing programs to select one that mostclosely aligned with the goals of the project. The program selected, Conscious ParentingFamily Circles Parent Support Process, was designed by Dr. Makungu Akinyela.[16] Dr.Akinyela modified the program to fit the structure of Keepin' it R.E.A.L. !, while retainingthe basic nature of his original parenting program. The Conscious Parenting Family Circles Parent Support Process approach to developing parenting skills is based on PauloFreire'S[17] educational theory. The approach emphasizes the expertise and life learningmothers bring to the group, and the group is viewed as an opportunity to build communitythrough shared experience. The real and immediate issues mothers bring to the group areused as the basis for teaching and discussion. Mothers are encouraged to assist one another in problem solving and to create a sense of community.

The general format for the parenting session consisted of four components. Each session began with a relaxation activity to separate group time from the remainder of the day and was followed by a review of issues occurring since the last session. The topic of the session was then introduced and discussed. Experiences of mothers were then used to explore parenting problems and issues through directed dialogue. Each session ended with a moment of reflection.

During the first session, the program was introduced, and the facilitator and mothers shared information about themselves. As a means to focus the group on a common goal and to engender group spirit, the facilitator introduced the potluck celebration to be held in the last session. The remainder of the session focused on a discussion by mothers about likes and dislikes of parenting.

During subsequent sessions, mothers shared life experiences that had been meaningful to them and their families, and they discussed their own personal values and their responsibilities for transmitting these values to their children, the influence of their own childhood and upbringing on their role as parents, and their successes in life. These life experiences were related to their role as parents and the challenges of raising children. Within this context, current parenting problems and issues were discussed. During the final session, adolescents presented their collages to their mothers, and together they shared a potluck dinner.

Control Condition

In addition to the two interventions, four data collection sites were randomly assigned to a control condition. Mothers and adolescents who agreed to participate in the control condition first completed a baseline assessment and then were invited to attend a 1-hour HIV prevention session. During this session, a 20-minute videotape that included information on HIV replication, transmission, and strategies for protection was presented, and a facilitator guided the participants in a discussion of HIV transmission and protection. Participants in the control group completed follow-up assessments at 4 months, 12 months, and 24 months after their baseline assessment. The accrual of participants for the control group was monitored so that it corresponded with recruitment of participants for the two treatment groups.

Assessment of Outcomes

To assess the efficacy of the interventions, mothers and adolescents were asked to complete interviews at four time points—before the program (baseline) and at 4, 12, and 24 months after the baseline assessment. lnformation collected at these times included that related to the study outcomes of sexual intercourse and use of HIV risk reduction practices among adolescents. Because we expected that the outcomes would be achieved by different processes, additional information was collected about theory-based mediators of self-efficacy, outcome expectancies, sex-based communication, self-concept, future time perspective, stress management, and parenting. Background personal information such as age, gender, race, and number of siblings was also collected at this time. Interviews for the mother consisted of a similar set of variables.

Follow-up assessments were conducted immediately after the interventions (4 months) for participants in the intervention conditions and at 4 months past the baseline for participants in the control condition. The interview was similar to that at baseline, with the exception of personal information, which was collected only at baseline. Additional assessments were conducted at 12 and 24 months following the baseline assessment.

Both mothers and adolescents required about 1 hour to complete the interviews that were conducted one-on-one by a trained interviewer. Interviews were generally conducted in the evening with the adolescent and mother at the same time in separate rooms with separate interviewers. Before conducting the baseline interview, mothers and adolescents signed an informed consent form. The interviewers explained the study and the requirements for participation with the mother and adolescent together. For each condition, the interviewers explained the expected time commitment and gave a brief overview of the content included in the sessions. The participants were given written information and a schedule of events. Mothers and adolescents were informed verbally and in writing that the interview contained questions about sexual activity. Because it is a law that child abuse be reported, the mother and adolescent were informed that if the adolescent told the interviewer that he or she had been physically or sexually abused, it would be reported to the Department of Family and Children Services. Mothers signed a consent form for themselves and one for the adolescent, and adolescents signed an assent form agreeing to participate. Participants were paid $20.00 for the baseline interview and $25.00 for each follow-up interview. Small tokens were given at the group sessions, including T-shirts, cups, and water bottles.

Measures

lntimate Sexual Behavior was assessed by 11 items excluding sexual intercourse. These items measure progression of sexual behavior, and each begins with the stem "Have you ever ... ?" The first item in the series is, "Have you ever gone out with boys/ girls in a group?" Participants could respond with either "yes" or "no" to each item. The number of "yes" responses to the 11 items was summed to yield an overall score. Total scores could range from 0 to 11, with higher scores corresponding to involvement in a greater variety of intimate sexual behaviors. The Kuder-Richardson coefficient for the 11-item scale was .86.

Sexual lntercourse was measured by a single item: "Have you ever had sexual intercourse (sex)" Participants were classified as having had sexual intercourse if they responded in the affirmative to this item.

Self-EfficacyforAbstinence was assessed with 12 items developed by the investigators and based on the definition of self-efficacy presented by Bandura.[9] This scale was composed of items related to three types of self-efficacy for abstinence: refusal for situations that lead to sex, avoidance of situations that lead to sex, and convincing others to avoid situations that lead to sex. Each item begins with the stem, "How sure are you that ...?" A sample item is, "How sure are you that you can say no to sex even though your friends think you should have sex?" Response options ranged from 1 (*not sure at all*) to 7 (*completely sure*). The value of Cronbach's alpha for the scale was .90.

Outcome Expectancies was assessed with a 19-item scale developed by the investigators and based on social cognitive theory. Sixteen items each begin with the stem, "lf you do not have sex ..." A sample item is, "lf you do not have sex, your mother will approve." Three items each begin with the stem, "lf you have sex ..." A sample item is, "lf you have sex, you will get a sexually transmitted disease." Responses for the items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's alpha was calculated to assess internal consistency, and the value was .85.

Communication About Sex was assessed with a 25-item scale developed by the investigators. This scale is composed of a list of specific topics about sex and other adolescent issues to which adolescents respond "yes" (they talked about) or "no" (did not talk about) with their mother, father, friends, or in school. Fifteen items are sex based, such as discussion about sexual intercourse; 6 items are general questions such as whom to go out with (date); and 4 items assess communication about the dangers of alcohol, drugs, smoking, and violence and/or weapons. A sample item is, "Have you ever talked to your mother, father, or friend(s), or in school about what your friends think about teenagers having sex?" lf the participant responds yes, he or she is asked to identify the specific person, that is, mother, father, or friend or if it was discussed in school. The alpha coefficient for this scale based on the current responses was .90.

The quality of general *Communication* with one's mother was assessed with the 18- item Parent-Adolescent Communication Scale. Items for the scale were adapted from Armsden and Greenberg's Inventory of Parent and Peer Attachment [18] and from Barnes and Olson's Parent-Adolescent Communication Scales.[19] The scale items were reviewed by a panel of experts and pretested before use in a previous study. Items on the scale are rated from 1 (*never true*) to 5 (*always true*), with higher scores indicating more positive mother-adolescent general

communication. A sample item is, “You are very happy with how you and your mother talk together.” The alpha coefficient for this scale based on the current responses was .90.

Self-Concept was assessed by four subscales of the Piers-Harris Children’s Self-Concept Scale.[20] The four subscales are labeled *Behavior, Intellectual and School Status, Happiness and Satisfaction,* and *Popularity*. Each item is measured on a dichotomous *yes/no* scale. Total responses are summed for each subscale to yield a total score. Sample items for the subscales are as follows: *Behavior*, “l get into a lot of fights” (reversed scored); *Intellectual and School Status*, “l often volunteer in school”; *Happiness and Satisfaction*, “l am cheerful”; *Popularity*, “l am easy to get along with.” Alpha coefficients ranged from .66 for Intellectual and School Status to .75 for Behavior.

Stress was assessed with a slightly modified 44-item version of the Hassles Index, which was developed for the Adolescent Pathways Project.[21] For each item, the participant responds “yes” (has happened in the past 3 months) or “no” (has not happened in the past 3 months). lf the participant responds “yes,” he or she is asked to respond to the same item on a 4-point scale, ranging from 1 (*not at all a hassle*) to 4 (*a very big hassle*). The two parts of each item were combined to calculate the total score for that item. A sample item is, “Family not having enough money.” The alpha coefficient computed for responses from this sample of participants was .92.

Future Time Perspective was assessed with the 25-item Heimberg Future Time Perspective lnventory. [22,23] A sample item is, “l don’t know what kind of work l will do in the future” (reverse scored). Response options for each item range from 1 (*strongly disagree*) to 5 (*strongly agree*). The alpha coefficient for this sample of responses was .80.

Parenting was assessed with a 14-item scale based on the work of Lamborn, Mounts, Steinberg, and Dornbusch[24] and used with permission. Response options for each item range from 1 (*strongly disagree*) to 5 (*strongly agree*). A sample item is, “When your mother wants you to do something, she tells you why she wants you to do it.” Possible total scores range from 14 to 70, with higher scores corresponding to the perception of greater maternal support. Cronbach’s alpha for responses from the current sample of participants was .84.

In addition to the above variables, information was collected on the adolescents’ age and gender, and the mothers’ age, education, and marital status.

DATA ANALYSlS

Sample

The sample for the present study included 612 adolescents and 491 mothers, 121 of whom had more than 1 adolescent participating in the study. As a criterion for participation in the larger study, adolescents ranged in age from 11 through 14 years (see Table 2). Adolescents were age 11(34.8%),12 (25.5%),13 (23.4%), or 14 (16.3%), and male (60.6%). Almost 90% lived with their biological mother, and 46.8% lived with their biological father, stepfather, or adoptive father. Additional analyses were conducted to determine if there were differences by study site and by study condition. Site differences were evident for gender, with some sites having a

greater proportion of male participants. This difference was attributed to the fact that two sites offered programs for men only. A difference

Table 2. Demographic Characteristics of Adolescent and Mother Participants

Variable	Frequency	Percentage
Adolescent participants ($N = 612$)		
Age		
11	213	34.8
12	156	25.5
13	142	23.2
14	101	16.5
Sex		
Male	371	60.6
Female	241	39.4
Race		
African American	601	98.2
White	6	1.0
Other	5	0.8
Mother participants ($N = 491$)		
Mother's age		
< 35	163	33.2
35-39	160	32.6
40-44	99	20.2
45 and older	69	14.1
Mother's education		
Less than high school	55	11.2
High school	164	33.4
Some college	188	38.3
College/higher	84	17.1
Mother's marital status		
Married	163	33.2
Separated	56	11.4
Divorced	127	25.9
Widowed	19	3.9
Never married	126	25.7

in conditions was noted with regard to age, with the problem behavior conditions having a slightly older group of participants than the other two conditions.

Regression

Participant responses to baseline assessment were analyzed using Statistical Analysis System (SAS) version 6.12.[25] The mean and standard deviation of study variables are shown in Table 3. Prior to regression analysis, we evaluated adherence to the assumptions underlying multiple regression—normality, homoscedasticity of residuals, and lack of multicollinearity.[26] Then, we analyzed the relationships between the variables in the study. Participation in intimate sexual behaviors was correlated significantly with age (r = .43,p <.00 1), being male (r = –.30,p <.00 1), self-concept subscales of behavior and popularity (r= –.18,p <.00 1; r= .208,p <.00 1, respectively), self-efficacy for abstinence (r = –.30, p < .00 1), and outcome expectancies for abstinence (r = –.29, p < .001), as well as communication on sexual issues (r =. 11, p <.00 1) and stress (r = .08, p <.05). Thus, participants who engaged in intimate sexual behaviors were more likely to be older, male,

Table 3. Means and Standard Deviations of Predictor and Outcome Variables

Scale	*N* (%)	*M*	*SD*
Outcomes			
Initiated sexual intercourse	68 (11.1)	—	—
Intimate sexual behaviors		3.60	3.03
Predictors			
Adolescent's age	—	12.21	1.10
Mother's age	—	37.93	6.80
Self-efficacy for abstinence	—	66.05	17.26
Outcome expectancies	—	65.92	12.33
Communication (sex)	—	16.85	6.30
Communication (general)	—	75.39	12.59
Self-esteem	—		
Behavior	—	0.87	.15
Intellectual and school status	—	0.86	.13
Happiness	—	0.93	.12
Popularity	—	0.79	.17
Future time perspective	—	88.91	12.47
Stress	—	70.23	24.18
Parenting	—	58.48	7.51

more popular, have higher stress scores, and reported more communication with their mothers about sex. In addition, they had lower self-efficacy to refrain from sexual intercourse, more negative outcome expectancies about refraining from sex, and lower self- concept related to their behavior. Sexual experience was correlated significantly with age ($r = .26$, $p < .00\ 1$), stress ($r = .11$, $p < .00\ 1$), and self-efficacy for abstinence ($r = –.25$, $p < .001$). Thus, participants who had initiated sexual intercourse were more likely to be older, have higher stress scores, and lower self-efficacy to refrain from sexual intercourse.

Multiple linear and logistic regression analyses were employed to examine the proposed associations among predictor and outcome variables.[26] The data in this study were collected in a randomized cluster design in which existing groups of individuals (sites) were randomly assigned to treatment conditions. In this type of design, the random effect of site is taken into consideration using mixed-model analysis.[8,27] In our initial analysis using PROC Mixed, a form of mixed-model analysis, we found that our measure of intimate behaviors did not meet the assumptions of multiple linear regression. The Intimate Behaviors measure showed a significant positive skew as indicated by the Wilk-Shapiro test (*SAS Procedures Guide*) .28 Thus, the data were analyzed by employing the generalized linear mixed model under the GLIMMlX macro.[29] This model also allows for the analysis of group-randomized data but places fewer restrictions on the distributional qualities of the dependent variable .29 Background variables of adolescents' age and gender, and the mothers' age, education, and marital status were entered into the analysis along with the study variables.

As shown in Table 4, the variables that were significant predictors of intimate sexual behaviors were age, gender, self-efficacy for abstinence, outcome expectancies, communication about sex, self-concept subscales of behavior and popularity, and stress. Specifically, older male participants and those who expressed higher levels of self-efficacy to

Table 4. Estimated Parameters and Standard Deviations With *p* Values for Intimate Sexual Behaviors

	Intimate Sexual Behaviors		
	β	*SD*	*p* Value
Age			
11	–3.09	± .33	.0001
12	–2.39	± .34	.0001
13	–1.59	± .34	.0001
14	Reference	Reference	Reference
Gender			
Female	–1.52	± .25	.0001
Male	Reference	Reference	Reference
Self-efficacy for abstinence	–.03	± .01	.0001
Outcome expectancies	–.03	± .01	.0124
Communication (general)	–.02	± .01	.1504
Communication (sex)	–.08	± .02	.0001
Self-esteem			
Behavior	–4.99	± 1.02	.0001
Intellectual and school status	.61	± 1.12	.5801
Happiness	–.85	± 1.12	.4463
Popularity	3.98	± .85	.0001
Future time perspective	.01	± .01	.1980
Stress	.01	± .01	.0330
Parenting	.02	± .02	.4177
Mother's age	.02	± .02	.2759
Mother's education	.12	± .07	.1168
Mother's marital status			
Not married	–.228	± .232	.3254
Married	Reference	Reference	Reference

resist pressures to have sex, more favorable outcome expectancies related to not having sex, less communication with their mothers about sex, higher levels of self-concept related to behavior, lower levels of self-concept related to popularity, and less stress participated in fewer progressively intimate sexual behaviors with a member of the opposite sex. The mother characteristics included in the analysis were not significant predictors of the adolescent's participation in intimate sexual behaviors.

The second set of analysis was conducted with the dichotomous outcome of sexual intercourse. Because the initial analysis using PROC Mixed analysis failed to converge, the analysis was conducted using standard logistic regression. For initiation of sexual intercourse, age, self-efficacy for abstinence, and stress were significant. Specifically, younger participants and those who expressed higher levels of self-efficacy to resist pressures to have sex (odds ratio [OR] = .97, 95% confidence interval [CI] = .95-.99) and lower levels of stress (OR = 1.02, 95% CI = 1.01-1.04) were less likely to have initiated sexual intercourse (Table 5). As with intimate sexual behaviors, the mother's age, education, and marital status did not significantly predict the initiation of sexual intercourse.

Table 5. Odds Ratios and Confidence Intervals for Initiation of Sexual Intercourse

Variable	Odds Ratio	95% Confidence Limits	
		Lower	Upper
Age 11	.01*	.04	.27
Age 12	.11*	.04	.30
Age 13	.33*	.15	.74
Gender	.64	.28	1.43
Self-efficacy for abstinence	.97*	.96	.99
Outcome expectancies	.98	.98	1.01
Communication (general)	.99	.96	1.03
Communication (sex)	1.00	.95	1.06
Self-esteem			
Behavior	.13	.01	1.96
Intellectual and school status	1.46	.06	37.43
Happiness	2.64	.11	62.12
Popularity	5.52	.35	87.22
Future time perspective	.10	.98	1.04
Stress	1.02*	1.01	1.04
Parenting	1.00	.95	1.05
Mother's age	1.18	.86	1.62
Mother's education	.87	.70	1.71
Mother's marital status	.95	.47	1.91

* Significance at $p < .05$.

DlSCUSSlON

Keepin' it R.E.A.L.! was conducted in collaboration with a community-based organization (CBO) dedicated to serving youths. The two primary programs offered throughKeepin' it R.E.A.L.! complemented the existing programs offered by this communityorganization. At the time we began developing the program, the community organizationhad expressed an interest in including more parents in their health programs. Keepin' itR.E.A.L.! met this objective, and we found that mothers were very interested in the program. The relatively high percentage of mothers who agreed to participate demonstratedthat the program met their needs for continued health and parenting education. The resultsof our evaluation conducted as part of the Keepin' it R.E.A.L.! program will be useful tothe community organization as the staff refines its health programming for parents and their children.

The percentage of adolescent participants who reported sexual debut was slightly lower than we expected. Only 68 (11%) of the 612 adolescents interviewed prior to the beginning of the program had reported the initiation of sexual intercourse. However, we did find, as expected, that the percentage of sexually active adolescent participants increased as a function of their age and that for each age group, male adolescents were more likely to report initiation of sexual intercourse than female adolescents. These findings are consistent with other studies examining the sexual behaviors of young adolescents.[3,5]

Self-efficacy, outcome expectancies, communication, self-concept, and stress were important factors explaining the participants' engagement in progressively more intimate sexual behaviors with members of the opposite sex. Participants who expressed higher levels of self-efficacy to resist pressure to have sex, more favorable outcome expectancies related to not

having sex, less communication about sex with their mothers, higher levels of self-concept related to their behavior, lower levels of self-concept related to popularity, and less stress reported fewer types of intimate sexual behaviors. Our results suggest that confidence in resisting pressure to have sex and a favorable view of the consequences of not having sex might serve to deter participants from engaging in behaviors that might lead to sexual intercourse. These findings are consistent with social cognitive theory that suggests that a person's confidence and expectations about behavioral performance help determine his or her behavior choices.[10]

Ideally, the transmission of information about sexual development and sexuality from parent to adolescent would be reflected in the adolescent's behavior. Given the acknowledged role of parents in the sexual socialization of their children, it might be expected that adolescents who learn about sexual development and decision making from their parents would be less likely to be involved in behaviors that are considered precursors to sexual intercourse. In our study, we found that participants who reported talking to their mothers about more sexual topics also acknowledged the greatest involvement in intimate sexual behaviors. These findings are similar to those of Lehr et al.,[30] who found that college students who talked more with their parents were more likely to have initiated sexual intercourse. The interpretation of our findings is confounded by the cross-sectional nature of the study. Thus, one interpretation is that adolescents who talk with their mothers are encouraged to participate in intimate forms of behavior. However, given that parents tend to be more conservative about their adolescent's initiation of sexual behaviors and that parents are generally reluctant to talk with their adolescents about sex, we believe that there is a more plausible explanation. We believe that parents are more likely to discuss a range of sexual topics with their adolescents when they believe that their adolescents are ready to receive the information. Thus, participants in this study who were involved in intimate behaviors with members of the opposite sex might have been providing cues to their parents about their behavior. The mothers prompted by concern for their adolescents could have responded by increasing their discussions about sexual topics. Thus, discussion about sex topics may have taken place "after the fact."

Another unexpected finding was that participants who reported higher levels of self- concept related to popularity were more likely to report involvement in intimate sexual behaviors. This finding conflicts with the general view of self-concept as a factor that serves to protect adolescents from participation in problem behaviors, including early initiation of sexual intercourse.[14] Because we also found that self-concept related to behavior did serve to reduce involvement in intimate sexual behaviors, it might be important for researchers to be aware of the possible differential effects of the various components of self-concept. For example, it is unlikely that self-concept related to popularity would serve as a protective factor for adolescents who are members of groups in which problem behaviors are the norm. Here, self-concept related to popularity might be considered detrimental to the adoption of healthy behaviors. In contrast, for adolescents who count academic achievers among their friends, the popularity self-concept may function as a protective factor. Likewise, for adolescents who derive their sense of worth from the performance of prosocial behaviors, self-concept can function in a protective manner.

A final factor that was important in explaining involvement in intimate sexual behaviors in our study was stress. Participants who reported higher levels of stress were more likely to indicate experiences with intimate sexual behaviors. Investigators have previously studied the link between stress and problem behavior.[31-33] In one study, adolescents who reported higher levels of stress were also more likely to report problem behaviors such as smoking, drinking, and using drugs.[32] Our findings add to these by demonstrating that stress might be an important factor to consider when examining reasons for early initiation of sexual intercourse. Because of the cross-sectional nature of our study, however, we cannot rule out the explanation that an adolescent's involvement in problem behaviors changes relationships with others in such a way that then might lead to more situations that evoke stress. Thus, the association between stress and problem behaviors deserves further study to determine if internalizing factors such as stress can help identify precursors to problem behaviors and to the behaviors themselves.

In contrast to the significant role that several factors played in explaining participation in intimate sexual behaviors, few of the proposed factors were able to differentiate adolescents who had initiated sexual intercourse from those who had not initiated sexual intercourse. The small number of participants who reported initiation of sexual intercourse is likely to be a major reason for the lack of significant results. Only 11 % of the participants reported having had sexual intercourse, and this may have resulted in decreased statistical power. In our follow-up assessments, which were conducted at 4, 12, and 24 months after the baseline assessment, we expect that a greater percentage of participants will be sexually active, and our present analyses will be repeated to examine predictors of sex initiation.

However, we did find that participants who believed that they could resist peer pressure to have sex were more likely not to have initiated sexual intercourse. We also found that adolescent participants who reported lower levels of stress were less likely to report initiation of sexual intercourse. As noted above, stress has been reported to be an important factor in understanding participation in problem behaviors. Our study extends those findings to include not only engaging in intimate sexual behaviors but also initiation of sexual intercourse. As noted previously, further research is necessary to fully appreciate the significance of stress as a precursor to the early initiation of sexual intercourse.

The characteristics of the mother examined in this study were not associated with either their adolescent's intimate sexual behaviors or initiation of sexual intercourse. Thus, the mother's age, education, and marital status did not differentiate between adolescents who reported involvement in sexual behaviors including sexual intercourse and those who did not. Some investigators have demonstrated that adolescents raised in mother-headed households initiate sexual intercourse at younger ages than those raised in dual-parent households.[34-35] This association was not found in our analysis. Perhaps our mother participants are not entirely representative of all mother-headed households. Our mother participants showed considerable involvement in their children's lives, as evidenced by their participation in the activities sponsored by the CBO. Perhaps level of involvement might be an important variable to consider when exploring maternal factors associated with early initiation of sexual behaviors.

Limitations

In addition to the limitations noted above, there are other characteristics of this study that limit the generalizability of its findings. The study was conducted in collaboration with a CBO that offers programs to youths. Adolescents who attend these programs are likely to be different from adolescents who do not in a number of ways, including their general interests and their motivation for future academic success. Parents of adolescents who attend the programs offered by the CBO are also likely to differ from other parents in their level of monitoring of their adolescents and involvement in their child's life. The study was further limited to a sample of adolescents who are predominantly African American and who have a stable maternal presence over time. Thus, the findings cannot be generalized to adolescents from families without a consistent maternal figure. Finally, the correlational nature of the study and the cross-sectional design limited the interpretation of the findings. Further empirical work with longitudinal assessments is needed to fully understand the role of the variables in predicting risky and safer sexual behaviors of adolescents. When data collection is complete for the Keepin' it R.E.A.L.!, tests will be conducted to determine if adolescents exposed to the treatment groups were more likely to delay the onset of sexual intercourse. In addition, for adolescents who are sexually active, statistical tests will be conducted to determine if those in the treatment group were more likely to use condoms and adopt other safer sex behaviors, including limiting their number of sexual partners.

Implications

Traditionally, adolescent pregnancy and HIV prevention programs have provided information only to adolescents. Some adolescents are ready to receive the information at the time it is presented, whereas others are not. Involving parents (in particular mothers) in HIV prevention programs for adolescents opens another avenue for providing information to adolescents and supporting them as they make their way through the transition from adolescence to adulthood. Moreover, parents have greater flexibility than schools and other organizations in discussing reproductive issues with their adolescents, as they are not constrained by time and place. Parent-adolescent programs such as the one described here can be offered in community settings, through schools or churches, or through social organizations.

Evaluation is an important component of program design and implementation. Data obtained from evaluations of parent-adolescent programs can be used to refine the programs to meet the needs of different populations. The results of the baseline assessment suggest that adolescents' confidence in resisting pressures to have sex is important as are attitudes about sexual behavior, self-concept, and perceived level of stress. Based on these results, programs that are designed to promote the delay of sexual intercourse should consider incorporating skill building related to confidence, self-concept, and stress management, and activities to promote positive attitudes about delaying the initiation of sexual intercourse.

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